

Drawings:

The drawings were objected to because Figs. 6 and 11 show projection 13 without a hatching. In the attached Drawing Change Authorization Request and set of new formal drawings, Figs. 6 and 11 have been modified to include hatching. Applicant therefore requests that the objection to Figs. 6 and 11 be withdrawn.

The drawing were objected to under 37 CFR §1.83(a) as allegedly not showing every feature of the invention specified in the claims. In particular, the Office Action held “Therefore, the *plurality* of commutator segments and the powder accommodation pocket and the foot of the projection as disclosed in claim 1 and the press-formed plate as disclosed in claim 2 and the corner edge as disclosed in claim 3 must be shown of the feature(s) canceled from the claim(s).”

Applicant has added new Fig. 15 which illustrates a plurality of commutator segments. Applicant submits that the addition of Fig. 15 does not enter new matter into the application. For example, page 6, lines 20-24 of the originally-filed specification states “The plurality of commutator segments 1 is made of a sintered carbon powder and is aligned into a disk at equal circumferential intervals. The plurality of commutator segments 1, as a whole, has ring-shaped commutator surface 10 at an end.” Fig. 15, which illustrates a plurality of commutator segments, therefore does not enter new matter into the application.

The claimed “powder accommodation pocket” and “foot” of the projection have been canceled from the claims. While the recitation of “press-formed plate” has been deleted from claim 2, new claim 18 recites “wherein the metal base plate is a metal press-formed plate.” The metal base plate (i.e., the metal press-formed plate) is depicted as metal base plate 2 in the drawings. Moreover, page 8, lines 18-20 of the specification states “The plurality of metal base plates 2, which is temporarily connected to each other by connection portions, is press-formed from a plate member. The portions around the engagement holes 4 are dented in the press-forming direction, thereby forming a dent 5.” The features required by claims 2 and 18 are thus illustrated in the drawings.

Claims 3 and 4 have been editorially revised to require a “corner edge.” This feature is illustrated, for example, by corner edge 6 in Fig. 2 of the application.

Accordingly, Applicant respectfully requests that the objections to the drawings under 37 CFR §1.83(a) be withdrawn. Applicant further requests that the proposed changes of the Drawing Change Authorization Request and the set of new formal drawings including the proposed changes be approved and entered into the present application.

Rejections Under 35 U.S.C. §112:

Claims 1-7 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

With respect to the comments regarding (now canceled) claim 1, the recitations of “a foot” and “a pocket” have been canceled from the still pending claims.

With respect to the comments regarding claim 2, new claim 14, from which claim 2 depends, recites clearly structural features such as “wherein said base portion has a groove for holding powder that comes off said projection around said projection.” Moreover, claim 2 no longer includes a recitation of a “press-formed plate”, although new claim 18 requires “wherein the metal base plate is a metal press-formed plate.” Accordingly, claim 18 makes clear what forms the press-formed plate.

With respect to the comments regarding claim 4, claim 4 has been amended to depend from claim 3 as suggested by the Office Action. Also, claim 5 has been amended so that it now depends from independent claim 14.

Applicant submits that all pending claims are now in full conformance with 35 U.S.C. §112 and thus respectfully requests that the above rejection of still pending claims 2-7 under 35 U.S.C. §112, second paragraph, be withdrawn.

Obviousness-Type Double Patenting Rejection:

Claim 1 was provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 09/799,624 (hereinafter “U.S. ‘624”). Applicant respectfully traverses this rejection.

Claim 1 has been canceled. New independent claim 14 requires a plurality of commutator segments each of which comprises a projection projecting from a center of a base portion, the base portion having a groove for holding powder that comes off the projection around the projection. This feature is not disclosed or suggested by claims 1-8 of U.S. '624. Accordingly, Applicant submits that claim 14 and its dependents are not "obvious" over claims 1-8 of U.S. '624. Applicant therefore respectfully requests that the rejection under the judicially created doctrine of obviousness-type double patenting be withdrawn.

Rejections Under 35 U.S.C. §103:

Claims 1-3 and 5-7 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Hotta et al (U.S. '183, hereinafter "Hotta") in view of Shimoyama (U.S. '576) and Saito et al (U.S. '298, hereinafter "Saito"). Applicant respectfully traverses this rejection. Claims 1 has been canceled and claims 2-3 and 5-7 now depend at least indirectly from new claim 14.

In order to establish a prima facie case of obviousness, all of the claimed limitations must be taught or suggested by the prior art. Applicant respectfully submits that the combination of Hotta, Shimoyama and Saito fails to teach or suggest all of the claimed limitations. For example, the combination fails to teach or suggest a plurality of commutator segments each comprising a projection projecting from a center of a base portion, the base portion having a groove for holding powder that comes off the projection as required by new claim 14 and its dependents. This claimed feature is supported by, for

example, the exemplary embodiment illustrated in Fig. 2 which shows groove 15 for holding powder that comes off projection 13.

Hotta fails to disclose the above claimed feature. Although Hotta discloses a projection, the projection is deformed under pressure after being inserted into a through hole of a metal plate (see col. 3, lines 45-51). Accordingly, Hotta fails to even appreciate the problem of shaved-off powder from the projection when the projection is press-fitted into the through hole of the metal base plate, let alone teach or suggest the claimed groove for resolving such a problem. Applicant notes that the Office Action admits “Hotta et al does not disclose having a powder section around the projections.” Neither Shimoyama nor Saito remedies this deficiency of Hotta. Accordingly, even if Hotta, Shimoyama and Saito were combined as proposed by the Office Action, the combination would not have taught or suggested all of the claimed limitations. Accordingly, Applicant respectfully submits that new claim 14 and claims 2-3 and 5-7 which depend therefrom are not “obvious” under 35 U.S.C. §103 over Hotta, Shimoyama and Saito.

Claim 4 was rejected under 35 U.S.C. §103 as allegedly being unpatentable over Hotta, Shimoyama and Saito and further in view of ordinary skill in the art. Claim 4 now depends from claim 14. Accordingly, Applicant submits that the above comments made with respect to claim 14 regarding Hotta, Shimoyama and Saito apply equally to claim 4. The “ordinary skill in the art” fails to remedy the above deficiencies of Hotta, Shimoyama and Saito.

Applicant therefore respectfully requests that the rejection of claim 4 be withdrawn.

New Claims:

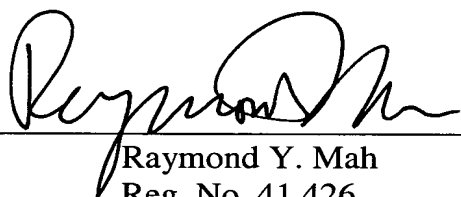
New claims 14-18 have been added to provide additional protection for the invention. Applicant submits that claim 14 is allowable for the reasons discussed above. Claims 15-18 depend at least indirectly from claim 14 and are thus also allowable for at least the reasons discussed above.

Conclusion:

Applicant believes that this entire application is in condition for allowance and respectfully requests a notice to this effect. If the Examiner has any questions or believes that an interview would further prosecution of this application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE
IN THE SPECIFICATION:**

Paragraph beginning at page 6, line 7 has been amended as follows:

Fig. 13 is a schematic cross-sectional plan view of the commutator segment and the metal base plate shown in Figs. 11 and 12 fixed in a unit; [and]

Paragraph beginning at page 6, line 10 has been amended as follows:

Fig. 14 is an enlarged schematic view of a portion of a commutator segment and a metal base plate of a commutator according to a fourth embodiment of the invention[.]; and

Fig. 15 is a cross sectional view of a plane commutator according to the first embodiment of the invention, showing, inter alia, a plurality of commutator segments.

Paragraph beginning at page 6, line 15 has been amended as follows:

A plane commutator of a fuel pump motor according to a first embodiment of the invention is described with reference to Figs. 1 - 3 and 15. The commutator is comprised of a plurality of commutator segments 1, a plurality of metal base plate 2 and a boss member 3.

IN THE CLAIMS:

2. (Amended) The plane commutator as claimed in claim [1] 14, wherein each said metal base plate [comprises a press-formed plate having] includes a dent for accommodating shaved powder formed when said projection of each said commutator segment is fitted to said engagement hole.

3. (Amended) The plane commutator as claimed in claim [1] 14, wherein each said engagement hole has an [edge] corner edge for shaving an outer periphery of one of said projections.

4. (Amended) The plane commutator as claimed in claim [1] 3, wherein said [edge] corner edge has a curved surface whose radius is less than 0.2 mm.

5. (Amended) The plane commutator as claimed in claim [1] 14, wherein said projection has a tapering portion at an edge thereof.

6. (Amended) The plane commutator as claimed in claim [1] 14, wherein each said plurality of commutator segments comprises a commutator surface portion providing said commutator surface and a commutator base portion providing said projection, and

said commutator base portion has lower electric resistance than said commutator surface portion.

7. (Amended) The plane commutator as claimed in claim 6,
wherein said commutator base portion includes metal powder.